



Energetic and Exergetic Analysis of Low and Medium Temperature District Heating Network Integration

Li, Hongwei; Svendsen, Svend

Publication date:
2011

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):

Li, H., & Svendsen, S. (2011). *Energetic and Exergetic Analysis of Low and Medium Temperature District Heating Network Integration*. Abstract from 2nd International Exergy, Life Cycle Assessment, and Sustainability Workshop and Symposium, Nisyros, Greece. <http://www.elcasnet.com/>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Energetic and Exergetic Analysis of Low and Medium Temperature District Heating Network Integration

Hongwei Li^a, Svend Svendsen^b

*^aCivil Engineering Department,
Technical University of Denmark, Denmark
Building 118, Brovej
DK-2800 Kgs.Lyngby, Denmark
Email: hong@byg.dtu.dk*

*^bCivil Engineering Department,
Technical University of Denmark, Denmark
Building 118, Brovej
DK-2800 Kgs.Lyngby, Denmark
Email: ss@byg.dtu.dk*

Abstract

In this paper, energetic and exergetic approaches were applied to an exemplary low temperature district heating (LTDH) network with supply/return water temperature at 55°C/25 °C. The small LTDH network is annexed to a large medium temperature district heating (MTDH) network. The LTDH network can be supplied through upgrading the return water from the MTDH network with a small centralized heat pump. Alternatively, the supply and return water from the MTDH network can be mixed with a shunt at the junction point to supply the LTDH network. Comparing with the second approach, the heat pump system will reduce the amount of water supply from the MTDH network and improve the system energy conversion efficiency. Through the simulation, the system energetic and exergetic efficiencies based on the two network integration approaches were calculated and evaluated.

Keywords: *District Heating Heat Pump Exergy*